UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,400	02/18/2004	Alan Phillips	PC 02-8-2	4331

30593 7590 02/24/2006

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. BOX 8910
RESTON, VA 20195

EXAMINER	
DUDA, RINA I	

ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/782,400	PHILLIPS ET AL.	
	Examiner	Art Unit	
	Rina I. Duda	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-29 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-29 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 18 February 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 5/21/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 13-19 and 24-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Simizu et al (US patent 6750622).

Claims 13, 14, Simizu et al describes a motor controller and a method for controlling battery-operated motors comprising using a PWM controller to control the power supply to a motor 10 from a power supply 11, wherein the motor provides torque to a load (as described in column 3 said load is a power tool).

Claim 15, Shimizu et al describe switch 14 for supplying current to the motor when turned ON.

Claim 16, Shimizu et al describe microprocessor 12 for turning switch 14 ON and OFF.

Claim 17, Shimizu et al describe that microprocessor 12 receives voltage signal 23 and determines when to turn switch 14 ON and OFF based on said voltage signal.

Claim 18, Shimizu et al describe microprocessor 12 receiving motor voltage signal 23 and battery voltage 21.

Claim 19, Shimizu et al describe microprocessor 12 including circuitry for speed control, see column 6 lines 45-65.

Claim 24, Shimizu et al describe a motor controller comprising means 14 for supplying power to a motor 10, means 12 for providing torque to motor 10 using a PWM technique.

Claim 25, Shimizu et al describe using the feedback from sensor 16 to determine the current drawn by motor 10 as well as power deliver to the motor.

Claims 26 and 27, Shimizu et al describe microprocessor 12 for monitoring the power supplied to the motor, the current drawn by the motor using the current feedback, and controlling the power delivered to the motor.

Claim 28, Shimizu et al describe using battery 11 to deliver power.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-8, 10, 11, 13-21, and 24-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Gilmore (US Patent 5731673).

Claims 1-5 and 11, Gilmore describes a controller and a method for controlling a power tool comprising using a PWM controller included in microcomputer 26 for supplying voltage pulses of an initial width to a motor 16 and changing the width of said voltage pulses based on a current feedback from sensor 30, see figure 2 and corresponding description.

Claims 6 and 7, Gilmore describe the use of a DC motor having a permanent magnet.

Claim 8, Gilmore describe microcomputer 26 controlling a power transistor 32.

Claim 10, Gilmore describe transistor 32 as a MOSFET.

Claims 13 and 14, Gilmore describe a power tool 10 having a housing (see figure 1), a power supply 18, a motor 16, and a PWM controller 26 for determining the current supplied to the motor by using current sensor 30.

Claim 15, Gilmore describe switch 32 for supplying current to the motor based on the output from PWM controller 26.

Claim 16, Gilmore describe that means 26 turns switch 32 ON and OFF.

Claim 17, Gilmore describes that means uses a voltage signal to control switch 32, see column 7.

Claim 18, Gilmore describes voltage regulator for determining the voltage in the system.

Claim 19, Gilmore describes in column 6 that his system includes a speed control circuit.

Claim 20, Gilmore describes a speed controller including potentiometer 15.

Claim 21, Gilmore describes potentiometer 14 for setting the current/voltage in the system.

Claim 24, Gilmore describe a motor controller comprising means 32 for supplying power to a motor 16, means 26 for providing torque to motor 16 using a PWM technique.

Claim 25, Gilmore describe using the feedback from sensor 30 to determine the current drawn by motor 16 as well as power deliver to the motor.

Claims 26 and 27, Gilmore describe microprocessor 26 for monitoring the power supplied to the motor, the current drawn by the motor using the current feedback, and controlling the power delivered to the motor.

Claim 28, Gilmore describes using battery 18 to deliver power.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 9, 12 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilmore (US Patent 5731673) and Capps et al (US patent 6353705).

Claim 9, the difference between the subject matter of claim 9 and Gilmore is that Gilmore does not teach the use of bipolar junction transistors. However, Capps et al describe a speed control system for controlling a DC motor M including bipolar transistor TR1 for controlling the current through the motor. Therefore, it would have obvious to one person of ordinary skill in the art to use bipolar transistors instead of MOSFET since bipolar transistors can amplify even weak incoming signals.

Claims 12, 22, and 23, the difference between the subject matter of claims 12/22/23 and the teachings of Gilmore is that Gilmore does not describe the use of

ramp signal generator. However, Capps et al describe wave generator 14 for setting a triangular wave, which will compare to a reference signal. Therefore, it would have been obvious to use a signal generator in order to be able to set a desired frequency for the control pulses, which could reduce the switching loss of power transistors in the system. Furthermore, Capps et al uses comparator OP1-OP3 for determining PWM waveforms.

7. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gilmore (5731673).

Gilmore discloses the claimed invention except for the battery being between 30 and 40 volts. It would have been an obvious matter of design choice to select the power supply to be between 30 and 40 volts, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose, 105* USPQ 237 (CCPA 1955).

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The documents cited in form PTO 892 describe other systems for controlling power tools using DC motors and PWM systems.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rina I. Duda whose telephone number is 571-272-2062.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula Bradley can be reached at 571-272-2800 ext. 33. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RD

RINA DUDA
PRIMARY EXAMINER